REMARKS

I. Status of Claims

Claims 1-17 are pending in this application. Claims 1, 8, and 10 are the independent claims.

Without waiving any argument, and to advance prosecution, claims 1, 4, 8, and 9 are amended. Support for the amendments may be found, *inter alia,* in step S110 of FIG. 7 and paragraphs [0063-64] of the published application (2006/0257698).

Further, claims 10-17 are newly added with claim 10 being independent. Claim 10 recites subject matter previously recited in claims 1 and 4. Claims 11-15 correspond to claims 2-3 and 5-7 respectively. Support for claims 16-17 may be found, *inter alia,* in paragraph [0066] of the published application No new matter is introduced by the amendments to the existing claims or the new claims added.

Claims 1-9 stand rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Sugiura (USPGPUB 2003/0118876) ("Sugiura").

The Applicant respectfully requests reconsideration of these rejections in view of the foregoing amendments and the following remarks.

II. Applicant's Statement of Substance of Examiner Interview

In compliance with M.P.E.P. 713.04, the Applicant provides this Statement of Substance of Interview concerning the interview conducted on September 14, 2009 with Examiners Barrow and Yuan, and the Applicant's representative Xiaomin Huang.

(A) Exhibits. N/A.

(B) Claim(s). 1 and 8.

(C) References Discussed. Sugiura.

(D) Amendments. N/A

(E) Principal arguments of Applicant. The Applicant argued that Sugiura did not disclose or suggest "starting the stopped operation of the fuel cell when the amount of electric power required by the load is equal to or larger than the reference value, and threshold value adjusting

device for adjusting the reference value according to internal electromotive force in the fuel cell whose operation has been stopped" as recited in claims 1 and 8.

(F) Other matters. None.

(G) Results. The Examiner indicated that the Applicant's arguments were not persuasive.

III. Rejections Under 102(b)

Independent claims 1 and 8 stand rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Sugiura.

The Applicant respectfully submits that amended claims 1 and 8 are patentable over Sugiura at least because they recite, *inter alia*, "...and starting the stopped operation of the fuel cell when ***the driving power required by the load*** is equal to or larger than the reference value, and threshold value adjusting device for adjusting the reference value according to internal electromotive force in the fuel cell whose operation has been stopped." (emphasis added)

The inventions of claims 1 and 8 relate to a vehicle including a motor that generates power for the vehicle and a fuel cell system that includes a fuel cell, an electric power storing device and an electric power supplying device for supplying electric power to the motor from the fuel cell and the electric power storing device. In the electric vehicle, the electric power supplying device includes an intermittent operation device for stopping operation of the fuel cell when a driving power required by the load (including the motor) is smaller than a reference value, and starting the stopped operation of the fuel cell when the driving power required by the load is equal to or larger than the reference value, and a threshold adjusting device for adjusting the reference value according to internal electromotive force in the fuel cell whose operation has been stopped. See paragraph [0016] of the application as published.

According to certain embodiments of the present application, the reference value(s) for stopping and starting the operation of the fuel cell is a driving power required by the load. It should be noted the driving power required by the load is not the same as an electric power output by the fuel cell. In particular, as recited in paragraph [0062] of the published application,

" since the amount of required driving power and the remaining capacity Q are read and are already known in step S110, the amount of electric power that needs to be generated by the fuel cell 20 is decided based on the amount of required driving power and the remaining capacity Q." Thus, it is clear that the required driving power may be supplied by fuel cell and/or the electric power storing device and the driving power required by the load is not the electric power output by the fuel cell. Further, when the fuel cell is stopped, there is no current flowing through the circuit and the fuel cell. In this condition, although the fuel cell still has an open circuit voltage, it does not output any electric power.

Embodiments of the present application are different from Sugiura. Instead of using voltage values as reference values to stop/start the operation of the fuel cell, embodiments of the present application set reference values in the driving power required by the load. Moreover, for example, in one embodiment, as recited in paragraph [0065] of the application as published, "when the open circuit voltage Vocv of the fuel cell 20 is 400 volts, the threshold value Pon is set to 7 kilowatts. When the open circuit voltage Vocv is 200 volts, the threshold value Pon is set to 3 kilowatts. The control portion 50 sets the threshold value Pon in this manner (S190)." Therefore, both independent claims 1 and 8 require that the reference values to stop/start the fuel cell are values for a driving power required by the load. Although an open circuit voltage may relate to a threshold value for the driving power required by the load, the open circuit voltage is not a driving power required by the load. Even in one particular situation that the driving power required by the load is completely supplied by the fuel cell and the portion of the power supplied by the fuel cell may be directly correlated to fuel cell voltage level, the driving power required by the load is still different from an open circuit fuel cell voltage level.

The Sugiura reference is directed to a power supply apparatus with a fuel cell and a capacitor. However, as recognized in the Office Action on page 4, Sugiura's reference value used to start/stop operation of the fuel cell refers to "reference voltage value." (emphasis added).

For example, paragraph 78 of Sugiura, which is cited by the Office Action, recites:

> "As a third embodiment, a control method will be described below in which different values are used as the reference voltage values employed when determining the timing for switching between the normal operating mode and the FC suspend mode. The reference voltage used for determining the timing of

> closing the switches 20 may be adjusted. The third embodiment will be described based on the electric vehicle 110 of the second embodiment, but it may also be applied to the first embodiment." (emphasis added)

As discussed above, both independent claims 1 and 8 require that the reference value for the driving power required by the load is to be adjusted according to internal electromotive force in the fuel cell whose operation has been stopped. Sugiura's control method cannot accomplish this task.

In Sugiura, two reference values, the first capacitor voltage V_1 and the second capacitor voltage V_2 ($V_1<V_2$), are used. The threshold value V_1, which determines that the fuel cell should be turned ON, is adjusted in accordance with the capacitor voltage rate of increase (dVd/dt). In comparision, in the present application, the threshold value Pon is adjusted in accordance with the ***internal electromotive force*** in the fuel cell (Vocv), although in one embodiment of the present application, two reference values are used (the required driving power Ps and the threshold value Pon (for determining whether the operation of the fuel cell needs to be started according to the present open circuit voltage (OCV) of the fuel cell 20) (Ps<Pon).

The capacitor voltage rate of increase (dVc/dt) that is the parameter which adjusts the reference value of Sugiura, is completely different from the ***internal electromotive force*** (Vocv) that is the parameter which adjusts the reference value of our invention.

Further, in Sugiura, the fuel cell is controlled by the capacitor voltage that is the value measured ***inside the fuel cell system***. On the other hand, in the present application, the fuel cell is controlled by the ***required driving power*** that is the value from the ***outside of the fuel cell system*** and does not relate to the system.

Accordingly, Sugiura adjusts only reference voltage values, but not a reference value for the driving power required by the load as claimed. The difference is more distinct when one considers the example provided above (and recited in paragraph [0065] of the application as published), wherein "when the open circuit voltage Vocv of the fuel cell 20 is 400 volts, the threshold value Pon is set to 7 kilowatts" and "[w]hen the open circuit voltage Vocv is 200 volts, the threshold value Pon is set to 3 kilowatts." Using Sugiura's control method, the only reference value that can be set is a reference voltage value of 200 volts, and once the open circuit voltage in Sugiura reaches this reference voltage value of 200 volts, Sugiura's fuel cell will be

started no matter what is the driving power required by the load. However, an embodiment according to either claim 1 or 8 will not start the fuel cell merely because an open circuit voltage reaches 200 volts. Also, an embodiment according to either claim 1 or 8 will further determine whether the driving power required also reaches a threshold value specifically set for 200 volts.

Furthermore, Sugiura's paragraph [0009] merely generally recites on/off controlling the connection between the fuel cell and the wiring in accordance with a power index, which may include size or magnitude of the load. This does not disclose or teach "starting the stopped operation of the fuel cell when ***the driving power required by the load*** is equal to or larger than the reference value, and threshold value adjusting device for ***adjusting the reference value according to internal electromotive force in the fuel cell*** whose operation has been stopped." (emphasis added)

Therefore, Sugiura's disclosure does not disclose or teach "...starting the stopped operation of the fuel cell when the driving power required by the load is equal to or larger than the reference value, and threshold value adjusting device for adjusting the reference value according to internal electromotive force in the fuel cell whose operation has been stopped" as recited in/required by claims 1 and 8.

Accordingly, it is respectfully submitted that claims 1 and 8, as well as their dependent claims, are patentable over the cited reference.

IV. New Claims

The Applicant respectfully submits that newly added independent claim 10 is patentable over Sugiura at least because it recites, *inter alia*, "...and starting the stopped operation of the fuel cell when ***the driving power required by the load*** is equal to or larger than the reference value, and threshold value adjusting device for adjusting the reference value according to internal electromotive force in the fuel cell whose operation has been stopped," and "the reference value includes a first reference value and ***a second reference value that is larger than the first reference value***; the intermittent operation device stops the operation of the fuel cell when the driving power required by the load is smaller than the first reference value, and starts the stopped operation of the fuel cell when the driving power required by the load is equal to or larger than the second reference value; and ***the threshold adjusting device adjusts the second reference***

value according to the internal electromotive force in the fuel cell whose operation has been stopped"(emphasis added)

As discussed herein above, certain embodiments of the present application relate to a fuel cell system supplies power for a vehicle. In the vehicle, the a fuel cell system includes an intermittent operation device for stopping operation of the fuel cell when a driving power required by the load is smaller than a first reference value, and starting the stopped operation of the fuel cell when the driving power required by the load is equal to or larger than a second reference value, and a threshold adjusting device for adjusting the second reference value according to internal electromotive force in the fuel cell whose operation has been stopped. See paragraph [0016] of the application as published.

In Sugiura the first capacitor voltage (i.e. threshold value) V_1 (which is the value determining whether the fuel cell should be turned ON) is smaller than the second capacitor voltage V_2. In contrast, in the present application, the second reference value Pon (i.e. threshold value), which determines the fuel cell should he turned ON, is larger than the first reference value Ps, as required by claim 10.

Accordingly, it is respectfully submitted that claim 10, as well as its dependent claims, is patentable over the cited reference.

The Applicant respectfully submits that the new dependent claims 16-17 are further patentable over Sugiura because they recite, *inter alia*, "...the threshold value adjusting device increases the second reference value according to an increase in the internal electromotive force in the fuel cell."

In Sugiura, the reference value V_1 is smaller as the capacitor voltage rate of increase (dVd/dt) is larger. On the other hand, in the present application, the reference value Pon is larger as the ***internal electromotive force*** (Vocv) is larger.

V. Conclusion

In light of the above discussion, the Applicant respectfully submits that the present application is in all aspects in allowable condition, and earnestly solicits favorable reconsideration and early issuance of a Notice of Allowance. The Examiner is invited to contact the undersigned at (202) 220-4420 to discuss any matter concerning this application. The Office is authorized to charge any fees related to this communication to Deposit Account No. 11-0600.

Respectfully submitted,

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By: /Daniel G. Shanley/
Daniel G. Shanley
(Reg. No. 54,863)

KENYON & KENYON LLP
1500 K Street, N.W., Suite 700
Washington, D.C. 20005-1256
Telephone: (202) 220-4200
Facsimile: (202) 220-4201
Customer No. 23838